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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)
	09/434,318	CHIEN ET AL.
	Examiner	Art Unit
	Theresa T Doan	2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☒ The proposed drawing correction filed on *07 June 2001* is: a)☒ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
18)☐ Interview Summary (PTO-413) Paper No(s) _____
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 6, 8-10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (5,998,810).

With respect to claims 1 and 6, Hatano et al. disclose in figure 14 and text related a semiconductor light-emitting device, comprising:

a transparent substrate 701;

a semiconductor stacked structure arranged over a main surface of the transparent substrate wherein the stacked structure comprises an n-type GaN-based III-V Group compound semiconductor layer adjacent to the main surface and a p-type GaN-based III-V Group compound semiconductor layer adjacent to the n-type semiconductor layer;

a first electrode 721 being in electrical contact with the n-type semiconductor layer; and

a second electrode 722 being in electrical contact with the p-type semiconductor layer that has good reflectivity of light and covers most of the outer surface of the p-type semiconductor layer.

Although Hanato et al. do not explicitly state that the second electrode has good reflectivity of light. It is well known in the art that Pt/Ti/Pt/Au has good reflectivity of light.

In the alternative, Hatano et al. teach that the electrode material comprise Al or Ag that has good reflectivity of light (column 7, lines 41-44). Therefore, Hanato et al.'s structure is considered to be at least obvious over the claimed structure.

With respect to claims 8 and 13, Hatano et al. disclose in figure 14 and text related a semiconductor light-emitting device, comprising:

a transparent substrate 701;

a semiconductor stacked structure arranged over a main surface of the transparent substrate wherein the stacked structure comprises an p-type GaN-based III-V Group compound semiconductor layer adjacent to the main surface and a n-type GaN-based III-V Group compound semiconductor layer adjacent to the p-type semiconductor layer;

a first electrode being in electrical contact with the n-type semiconductor layer; and

a second electrode being in electrical contact with the p-type semiconductor layer;

wherein the first electrode has good reflectivity of light covers most of the outer surface of the n-type semiconductor layer.

Although Hanato et al. do not explicitly state that the second electrode has good reflectivity of light. It is well known in the art that Pt/Ti/Pt/Au has good reflectivity of light.

In the alternative, Hatano et al. teach that the electrode material comprise Al or Ag that has good reflectivity of light (column 7, lines 41-44). Therefore, Hanato et al.'s structure is considered to be at least obvious over the claimed structure.

With respect to claims 2 and 9, Hatano et al. disclose the stacked structure further comprises an active layer 707 placed between the n-type semiconductor layer and the p-type semiconductor layer (figure 14).

With respect to claims 3 and 10, Hanato et al. disclose an insulating layer at least coated on the side surface of the stacked structure, a portion of the first electrode and a portion of the second electrode (figure 14).

3. Claims 4-5 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (5,998,810) in view of Okazaki (5,990,500).

Hatano et al. teach substantially the entire claimed structure, as applied to claims 1and 8 above, except a base connect to the first and second electrodes. However, Okazaki teaches a base that has a first and second conductive portions respectively connected to the first and second electrodes; and the base can be a conductive lead

frame (see figure 7, column 1, lines 37-48). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the base in Hatano et al. as taught by Okazaki for improving the mechanical strength of flip-chip device structure.

4. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (5,998,810) in view of JP 03263878 A.

Hatano et al. teach substantially the entire claimed structure, as applied to claims 1and 8 above, except the second electrode is a multi-layer structure of (Ni/Au/Ti/Al), (ITO/Al) or (ITO/Ag). JP 03263878 A teaches in the abstract the second electrode 7 is made of (ITO/Ag).

Given the above teaching, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to use an electrode comprising (ITO/Ag) in Hanato et al.'s device as taught by JP 03263878 A in order to obtain better reflectivity of light.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T Doan whose telephone number is (703) 305-2366. The examiner can normally be reached on 8:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, OLIK CHAUDHURI can be reached on (703) 308-2794. The fax phone

numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TD
August 17, 2001

[illegible]
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER